

December 2001

2000 CENSUS

Significant Increase in Cost Per Housing Unit Compared to 1990 Census

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United States General Accounting Office
Washington, DC 20548

December 11, 2001

The Honorable Dan Miller
Chairman
The Honorable William Lacy Clay, Jr.
Ranking Minority Member
Subcommittee on the Census
Committee on Government Reform
House of Representatives

The Honorable Carolyn B. Maloney
House of Representatives

The decennial census is the nation's most comprehensive and expensive data-gathering program. From providing the basis for apportioning the U.S. House of Representatives to providing data used by communities, businesses, and Americans everywhere, the decennial census provides a great deal of knowledge about our nation. In a previous report,¹ we estimated that when compared to the 1970 census, the projected full-cycle cost² per housing unit of the 2000 census would quadruple and the total cost would nearly double the costs of the 1990 census.

According to Census officials, the significant cost increase can be attributed primarily to the bureau's attempt to achieve a better quality census than in 1990. According to preliminary data from the Accuracy and Coverage Evaluation program, it appears that the 2000 census did reduce the net undercount for children and minorities compared to the 1990 census. However, due to current, ongoing studies and evaluations of the 2000 census, it is too early to determine the full extent of improvements compared to the 1990 census.

As agreed with your offices, this report responds to your joint request for us to (1) update full-cycle costs to reflect the most current information and

¹2000 Census: Analysis of Fiscal Year 2000 Amended Budget Request (GAO/AIMD/GGD-99-291, September 22, 1999). In this report, we estimated the cost per housing unit in fiscal year 1998 dollars to be \$13 for 1970, \$24 for 1980, \$31 for 1990, and \$56 for 2000.

²Full-cycle cost covers all phases of a decennial census, including planning and development, the actual count or enumeration, and postenumeration studies. For the 2000 census, this includes a 13-year period from fiscal years 1991 through 2003.

(2) analyze bureau data to determine the causes of the significant increase in cost per housing unit for the 2000 census when compared to the cost of the 1990 census to assist the bureau in planning for the 2010 census. We did not assess the quality of the 2000 census in this report. This report is one of several we will be issuing in the coming months on lessons learned from the 2000 census that can enhance the planning effort for the 2010 census.

We obtained and analyzed financial data from the U.S. Census Bureau to develop full-cycle costs of the 1970 through 2000 decennial censuses and converted all amounts to constant fiscal year 2000 dollars. Cost information provided by the bureau for the 1990 census was limited, making it difficult to compare costs with the 2000 census. The more comprehensive cost data available for the 2000 census should provide a better baseline for use in budgeting and planning for the 2010 decennial census. We performed our work in Washington, D.C., and at bureau headquarters in Suitland, Maryland. Our work was performed from June 2001 through August 2001 in accordance with U.S. generally accepted government auditing standards, except that we did not audit and therefore give no assurance as to the reliability of cost information provided by the bureau. Further details on our scope and methodology are included in appendix I.

Results in Brief

The estimated full-cycle cost of the 2000 decennial census of about \$6.5 billion is nearly double the \$3.3 billion reported full-cycle cost of the 1990 decennial census.³ When full-cycle cost is divided by the number of American households, the cost per housing unit of the 2000 census was \$56 compared to \$32 per housing unit for the 1990 census. The \$24 increase was primarily the result of (1) \$16 for expanded field data collection methods, (2) \$3 for the extensive use of technology and contractor support, (3) \$2 for more enhanced methods for data content and products, (4) \$2 for increases in marketing, communication, and

³The \$6.5 billion estimated costs are actual obligations for fiscal years 1991 through 2000 and estimated obligations for fiscal years 2001 through 2003. We have adjusted all costs throughout this report to constant fiscal year 2000 dollars. While this adjustment removes the impact of changes in prices of the goods and services purchased by the bureau, including compensation of employees, it is not designed to measure any changes in the quality of the 2000 census results. We used the Gross Domestic Product price index to adjust for inflation for the 1970, 1980, 1990, and 2000 censuses. For fiscal years 2001 through 2003, we deflated cost estimates to constant fiscal year 2000 dollars using factors from the Congressional Budget Office's *Economic and Budget Outlook*, January 2001.

partnership programs, and (5) \$1 for increases in address list compilation and other census activities. Reasons for the primary areas of cost increases include the following.

- For the 1990 census, field data collection cost was \$16 per housing unit, while the 2000 census cost doubled to \$32 per housing unit. Field data collection, the most expensive and largest component of costs for both the 1990 and 2000 decennial censuses, is labor-intensive and includes operations such as nonresponse follow-up, which entails temporary workers, known as enumerators, visiting millions of American households that did not return their census questionnaires by mail. The \$16 increase for the 2000 census occurred due to (1) expanded data collection operations, (2) lower productivity for enumerators who conducted the nonresponse follow-up operation, and (3) higher logistic support costs.
- In the 1990 census, technology costs were about \$5 per housing unit compared to about \$8 per housing unit for the 2000 census. This \$3 increase was due to the development and staffing of a new data capture system supported by contractors for the 2000 census using new automatic document scanning technology. This contrasted with the 1990 census, for which bureau personnel developed and conducted data capture technology operations in-house and hand keyed more census questionnaire information.
- For the 1990 census, the data content and products activity cost about \$3 per housing unit and, for the 2000 census, costs amounted to about \$5 per housing unit. Data content and products included the redesign of short and long form census questionnaires and printing and postage costs for a multiple mailing strategy. About half of the \$2 increase was due to development costs for a more user-friendly design and format for questionnaires for the 2000 census, including questionnaires in English, Spanish, and four other languages. For the 1990 census, questionnaires were only available in English and Spanish. The remaining half of the increase was due to the use of first-class postage for a multiple mailing strategy to inform households about the census, which included a prenotice card, the census questionnaire, and a postnotice card. For the 1990 census, a prenotice card was not used, and the census questionnaire and the postnotice card were both mailed using third-class postage.
- The last major category of increased costs relates to marketing, communications, and partnerships, which included census advertising and promotion and federal partnerships with about 140,000 state, local, and tribal governments and community groups. For the 1990 census, costs for this area were less than \$1 per housing unit, while the 2000 census costs amounted to over \$3 per housing unit. This increase was due to the bureau using a contractor to design and conduct a professional advertising

campaign for the 2000 census at a cost of about \$1 per housing unit. For the 1990 census, the bureau relied on free public service advertising. The bureau used expanded efforts to create partnerships in the 2000 census, adding about \$1 per housing unit for the 2000 census.

In commenting on a draft of this report, the Department of Commerce, U.S. Census Bureau, concurred with the underlying data as presented in this report. However, the bureau expressed its concern that our report identified cost increases without providing an appropriate explanation for them. The objectives of this review did not include assessing the quality of the 2000 census. As stated previously, this report is one of several we will be issuing in the coming months on lessons learned from the 2000 census. As was done after the 1990 census, we are currently reviewing key operations of the 2000 census. Our response to the bureau's specific comments is included in appendix II.

Background

The bureau performs large surveys and censuses that provide statistics about the American people and the U.S. economy. The business activities of the bureau can be divided into four categories: decennial and other periodic census programs, demographic programs, economic programs, and reimbursable work programs that are conducted mainly for other federal agencies. During fiscal year 2000, the bureau conducted the actual decennial count of U.S. population and housing as of April 1, 2000, which is its largest and most complex activity. The results of the 2000 decennial census are used to apportion seats in the U.S. House of Representatives, draw congressional and state legislative districts, and form the basis for the distribution of an estimated \$200 billion annually of federal program funds over the next decade to state and local governments.

Since the 1970 census, the bureau has used essentially the same methodology to count the vast majority of the American population during the decennial census. The bureau develops an address list of the nation's households and mails census forms (questionnaires) to those households asking the occupants to mail back the completed forms. The bureau hires temporary census takers, known as enumerators, by the hundreds of thousands to gather the requested information for each nonresponding household.⁴

⁴The bureau refers to this activity as "nonresponse follow-up."

Over time, because of social and attitudinal changes, the public became less willing to participate in the decennial census. By 1990, these problems escalated to the point where the most expensive census up to that time produced less accurate results than the preceding census. Consequently, the bureau's plan for the 2000 census included the above elements but also included several important innovations to the census process designed to improve census accuracy. For example, prior to the 2000 census, local and tribal government officials were given expanded opportunities to review the bureau's address list and identify missing addresses for inclusion in the census. The bureau also implemented the New Construction Program, which invited local governments to submit addresses for housing units that had been built subsequent to the completion of the address list in January 2000. In addition, the 2000 census questionnaires were available upon request in six languages, and households were given expanded opportunities to respond to the 2000 census by telephone or via the Internet. Also, for the 2000 census, the bureau initiated the largest promotion and outreach effort in its history for a decennial census and conducted the first-ever paid advertising campaign.

As indicated in table 1, the increase in decennial census full-cycle costs in recent decades has been dramatic. Expressed in dollars of fiscal year 2000 purchasing power, the full-cycle costs of the decennial census rose from \$920 million for the 1970 census to a current estimate of about \$6.5 billion⁵ for the 2000 census, for an increase of about 600-percent after adjusting for inflation. The Gross Domestic Product (GDP) price index was used to adjust for inflation for the 1970, 1980, 1990, and 2000 censuses, while projections for years 2001 through 2003 were adjusted using factors from the Congressional Budget Office's *Economic and Budget Outlook*, January 2001.

⁵The \$6.5 billion estimated costs are actual obligations for fiscal years 1991 through 2000 and estimated obligations for fiscal years 2001 through 2003.

Table 1: Decennial Census Full-Cycle Costs and Housing Units, 1970 Through 2000

In constant fiscal year 2000 dollars				
Census	Period	Costs (dollars in billions)	Housing units (in millions)	Cost per housing unit (in dollars)
1970	1964-1973	\$0.920	70.7	\$13
1980	1974-1983	2.159	90.1	24
1990	1984-1995	3.275	104.0	32
2000	1991-2003	6.553	117.3	56

Source: GAO analysis of unaudited bureau data.

Since census costs depend primarily on the expense of delivering a mail questionnaire to a housing unit or having an enumerator visit a housing unit, it is more realistic to relate cost growth to the rise in the number of housing units rather to population growth. Even when housing units are vacant and contain no household, there is a cost to ascertaining that fact. Therefore, the number of housing units is the relevant unit to consider for cost analysis.

A housing unit may be a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or, if vacant, is intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live separately from any other individuals in the building and which have direct access from outside the building or through a common hall. For vacant units, the criteria of separateness and direct access are applied to the intended occupants whenever possible. If that information cannot be obtained, the criteria are applied to the previous occupants. Both occupied and vacant housing units are included in the housing unit inventory. Boats, recreational vehicles, vans, tents, and the like are housing units only if they are occupied as someone's usual place of residence. Vacant mobile homes are included provided they are intended for occupancy on the site where they stand. Vacant mobile homes on dealers' lots, at factories, or in storage yards are excluded from the housing inventory. Also excluded from the housing inventory are quarters being used entirely for nonresidential purposes, such as stores or offices, or quarters used for the storage of business supplies or inventory, machinery, or agricultural products.

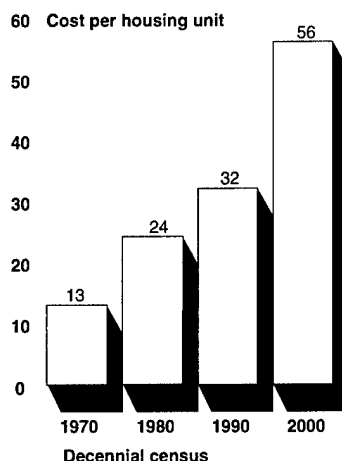
The estimated full-cycle costs of the 2000 census do not take into account all costs of the decennial census. For example, as of September 30, 2000, about \$85 million of costs for estimated claims for unemployment for temporary workers are not included in the cost per housing unit figures in this report. Any unemployment claims paid are absorbed by the Federal

Employees Compensation Account in the Unemployment Trust Fund, administered by the Department of Labor, without reimbursement by the bureau.⁶

Cost Per Housing Unit for the 2000 Census Increased Significantly

As shown in figure 1, the cost per housing unit in constant fiscal year 2000 dollars grew from \$13 in 1970 to \$56 in 2000, a 330-percent increase.

Figure 1: Decennial Census Full-Cycle Cost Per Housing Unit, Fiscal Years 1970 Through 2000 (in Constant Fiscal Year 2000 Dollars)



Source: GAO analysis of unaudited bureau data.

In constant fiscal year 2000 dollars, the estimated full-cycle cost of the 2000 decennial census of about \$6.5 billion is nearly double the \$3.3 billion cost of the 1990 decennial census. When full-cycle cost is divided by the number of American households of 117.3 million in 2000 and 104.0 million in 1990, the cost per housing unit of the 2000 census of \$56 increased 75-percent compared to the 1990 census cost of \$32 per housing unit. Table 2 shows the cost increases in eight broad “frameworks” of effort used by the bureau in its financial management reports for the 2000 census.

⁶Annual appropriations acts have prohibited the Department of Commerce and the U.S. Census Bureau from reimbursing the Unemployment Trust Fund for such claims, which otherwise would be required by law. See appropriations acts covering the 2000 census cited in 13 U.S.C. 23 note (2000).

Table 2: 1990 and 2000 Decennial Census Total Cost and Cost Per Housing Unit

In constant fiscal year 2000 dollars				
Framework number and description	1990 census cost (dollars in millions)	1990 cost per housing unit (dollars)	2000 census cost (dollars in millions)	2000 cost per housing unit (dollars)
1. Program Development and Management	\$124	\$1.20	\$143	\$1.22
2. Data Content and Products	272	2.61	579	4.93
3. Field Data Collection and Support Systems	1,680	16.16	3,803	32.43
4. Address List Compilation	318	3.05	390	3.33
5. Automated Data Processing and Telecommunications Support	487	4.68	877	7.48
6. Testing, Evaluation, and Dress Rehearsal	246	2.37	288	2.45
7. Puerto Rico, Virgin Islands, and Pacific Areas	57	0.55	99	0.84
8. Census Marketing, Communication, and Partnerships	91	0.88	374	3.19
Total	\$3,275	\$31.50	\$6,553	\$55.87

Note: Table 2 information is presented according to the framework structure used in the 2000 census. The 1990 census information was originally presented in 13 frameworks. We requested and the bureau provided reclassified cost data on the 1990 census in these eight frameworks to facilitate comparisons between the 1990 and 2000 censuses.

Source: GAO analysis of unaudited bureau data.

The \$24 cost per housing unit increase was primarily the result of increased costs in four of the eight frameworks: (1) \$16 for expanded field data collection methods, (2) \$3 for the extensive use of technology and contractor support, referred to as automated data processing and telecommunications support, (3) \$2 for more enhanced methods for data content and products, and (4) \$2 for increases in marketing, communication, and partnership programs. Finally, other areas such as the compilation of a complete and accurate address list and the testing of the census design contributed the remaining \$1 of the \$24 increase in the 2000 census compared to the 1990 census.

Field Data Collection Was the Largest Increase in Costs

Framework 3, Field Data Collection and Support Systems, was the most expensive and the largest component of census costs, contributing about \$16 or two-thirds of the \$24 increase in per housing unit cost of the 2000 census. Field data collection is labor-intensive and includes operations such as nonresponse follow-up, which entails temporary workers, known as enumerators, visiting millions of households that did not return census questionnaires by mail or otherwise respond. As indicated in table 2, the cost for this framework for the 1990 census was about \$1.7 billion, which accounted for half of the total \$32 per housing unit cost. However, for the 2000 census, costs for this framework more than doubled to about

\$3.8 billion or \$32 of the total \$56 per housing unit cost. The \$16 increase for the 2000 census occurred due to (1) expanded data collection operations, (2) lower productivity for enumerators who conducted the nonresponse follow-up operation, and (3) higher logistic support costs.

First, according to the bureau, expanded data collection operations contributed about \$14 of the \$16 increase in field data collection costs. For example, for the 2000 census, the bureau expanded coverage improvement programs, which were designed to improve census coverage and accuracy. For the 2000 census, the coverage improvement program included for the first time the enumeration of addresses from the update/leave operation and new construction follow-up. Also, another example of expanded operations for the 2000 census was the telephone questionnaire assistance center. For the 1990 census, the telephone questionnaire assistance was conducted by bureau staff members, who handled over 2 million calls and worked in six processing centers. For the 2000 census, the telephone questionnaire assistance center was operated by contractors, who handled about 6 million calls and operated from 22 nationwide call centers. We could not analyze each data collection operation and compare the 2000 census to the 1990 census, except for the nonresponse follow-up operation discussed below, due to incomplete or missing cost and performance data for the 1990 census.

Second, lower enumerator productivity for the nonresponse follow-up operation in the 2000 census compared to the 1990 census contributed about \$1 of the \$16 increase in costs in the field data collection area. According to the bureau, enumerator productivity to visit nonresponding households and complete questionnaires in the 1990 census was 1.56 cases per hour but dropped by one-third to 1.04 cases per hour in the 2000 census. Productivity is calculated by dividing the total workload (the number of housing units) by the total number of production hours worked. For the 1990 census, the bureau had a workload of over 39 million nonresponding housing units as compared to a workload of about 42 million nonresponding housing units in the 2000 census for a 7-percent increase. About 25 million production hours for the 1990 census increased to about 40 million production hours for the 2000 census for a 60-percent increase. However, according to the bureau officials, the higher production hours for the 2000 census were due to more quality assurance procedures, such as crew leader edits and enhanced office checks, plus more re-interview checks. Information on enumerator productivity rates by type of local census office, the bureau's methodology for refining the productivity data, and factors that could improve the collection and

analysis of productivity data in the future are highlighted in our October report.⁷

Third, higher logistical support costs for increases in the number and size of local census offices, increases in equipment, and increases in temporary support office workers in the 2000 census compared to the 1990 census contributed less than \$1 of the \$16 increase in the field data collection area. For the 1990 census, there were 458 district offices, which were increased by 62 to a total of 520 local census offices for the 2000 census. According to the bureau, the additional 62 local census offices were necessary to support the increase in workload for the 2000 census. This 14-percent increase in the number of offices resulted in cost increases for items such as space rental, utilities, equipment, and supply costs. Also, according to the bureau, the local census offices in 2000 were larger with more equipment, such as mapping equipment and telecommunications, when compared to those in 1990. In addition, the bureau asserts that the 2000 census had a higher number of temporary office workers in the local census offices that were used to support all activities of the 2000 census, such as address list development. Again, we were unable to independently analyze the bureau assertions due to the lack of or incomplete cost data for the 1990 census.

Automated Data Processing and Telecommunications Support

Framework 5, Automated Data Processing and Telecommunications Support, was the second largest category of costs for both the 1990 and the 2000 censuses and contributed about \$3 of the \$24 per housing unit cost increase for the 2000 census. As indicated in table 2, the cost for this framework for the 1990 census was about \$487 million or almost \$5 of the total \$32 per housing unit cost. However, for the 2000 census, the cost for this framework increased about 80-percent to \$877 million or about \$8 of the total \$56 per housing unit cost. This \$3 increase was due to the development and staffing of a new data capture system for the 2000 census using new automatic document scanning technology, which was supported by contractors. This contrasted with the 1990 census, for which bureau personnel developed and conducted data capture technology operations in-house and hand keyed more census questionnaire information.

⁷2000 Census: Better Productivity Data Needed for Future Planning and Budgeting (GAO-02-4, October 4, 2001).

During the 1990 census, the bureau developed and built a data capture system in-house called FACT90. This system consisted of high-speed cameras to film each form, microfilm processors to develop and process the film, and a film optical sensing device to capture check box responses from the forms for computer input. Computer terminals were used to enter all handwritten data from the paper forms. Automation was limited to the multiple-choice questions and the bureau keyed 100-percent of the reported write-in fields. Also, name keying was limited primarily to multi-unit surnames for person number one on the questionnaire. Although the bureau had seven data capture centers in 1990, final data capture processing was not completed until September 1991.

For the 2000 decennial census, the bureau relied extensively on contractors to develop a data capture system that used the latest commercial technology, incorporated a number of internal controls to improve the accuracy of data processed, and was more timely in completing census operations. The bureau did not have the expertise to develop the complex new technology in-house. The technology included automated equipment to sort questionnaires by categories and optical character recognition readers to scan approximately 75-percent of handwritten questions without need for further human intervention. In addition, optical mark recognition equipment captured 100-percent of the check box questions on both the long and short form questionnaires. Internal controls included manual review of a small number of data fields that contained multiple responses for accuracy as part of the keying operation before data were transmitted for processing. In addition, response data were verified and a file was returned to check questionnaires using a positive checkout system, and there was 100-percent full name keying of all persons in the household to assist the bureau in a review for duplicate counts. The four data capture centers with the new technology allowed for the processing of census data to be completed by the end of 2000.

Data Content and Products Increased Costs

Framework 2, Data Content and Products, was the third largest category of costs for the 2000 census and contributed over \$2 of the \$24 per housing unit cost increase for the 2000 census. This area included questionnaire design of long and short forms, a multiple mailing strategy, and printing and postage costs. As indicated in table 2, the cost for this framework for the 1990 census was about \$272 million, or less than \$3 of the total \$32 per housing unit cost. However, for the 2000 census, costs for this framework more than doubled to \$579 million, or almost \$5 of the total \$56 per housing unit cost. The \$2 cost increase of the 2000 census was due to the

design of a more user-friendly questionnaire, the availability of a census questionnaire in other languages, a multiple mailing strategy with higher printing and postage costs, and the development of a new data retrieval system to disseminate census 2000 data.

For the 1990 census, questionnaires were “computer-friendly” to assist the bureau in processing the forms more easily, but some households found them difficult to understand and complete. For the 2000 census, the bureau contracted with commercial designers to produce questionnaires that were simpler and easier to fill out or “respondent-friendly,” thus making them more likely to be completed and returned. Questionnaires for the 1990 census were only available in English and Spanish, while for the 2000 census, questionnaires were also available in Chinese, Korean, Vietnamese, and Tagalog. The availability of the additional language forms in 2000 and the redesign of the census questionnaire also increased printing costs over the 1990 census.

In addition, for the 1990 census, the bureau mailed the census questionnaires and a postnotice card. For the 2000 census, the bureau developed a multiple mail strategy to inform households about the census. First, a prenotice card was sent out to alert households of the census and its benefits with an offer to send a questionnaire in languages other than English upon request. The census questionnaire then was mailed noting that “responses were required by law.” Finally, a postnotice card was sent to households thanking those who participated and reminding others to complete the forms if they had not already done so. For the 1990 census, about 180 million items were printed using third-class postage on all mailings at a cost of about \$17 million. For the 2000 census, printing volume almost doubled to about 340 million items, including additional language forms, and all mailings used first-class postage at a cost of about \$117 million.

Also, according to the bureau, for the 1990 census, data was disseminated using CD-ROM and printed copy. For the 2000 census, the bureau expanded its efforts through a new data retrieval system called the American FactFinder to disseminate census data. This system is available to the widest possible array of users through the Internet, Intranets, and all available intermediaries, including the nearly 1,800 State Data Centers and affiliates; the 1,400 Federal Depository libraries; and other libraries, universities, and private organizations.

Marketing, Communication, and Partnerships Increased Costs

Framework 8, Marketing, Communication, and Partnerships, was the fourth largest category of increased cost for the 2000 census, and this area contributed about \$2 of the \$24 per housing unit cost increase for the 2000 census. This area included costs for advertising and promotion and partnerships with state, local, and tribal governments, as well as community groups. As indicated in table 2, the cost for this framework for the 1990 census was about \$91 million, or less than \$1 of the total \$32 per housing unit cost. However, for the 2000 census, costs for this framework quadrupled to \$374 million, or over \$3 of the total \$56 per housing unit cost. The \$2 cost increase for the 2000 census was the result of expanded efforts to promote a higher level of responsiveness,⁸ particularly for those segments of the population traditionally most difficult to enumerate. These efforts included a paid advertising campaign and the involvement of community partnerships.

For the 1990 census, the bureau marketing effort was limited and it was considerably expanded for the 2000 census. This included a multifaceted effort to remind the general population about the census, educate members of the public who did not understand the purpose of the census and its significance to their communities, and motivate Americans to complete their census questionnaires. The main components of the bureau's Partnership and Marketing Program for the 2000 census were the following.

- The bureau used its first-ever paid advertising campaign to generate awareness about the 2000 census via print, broadcast, and out-of-home advertising. For the 1990 census, an advertising campaign was conducted with free advertising of the Ad Council, a nonprofit organization responsible for administering public service advertising campaigns. Since the advertising was free to fill available air space, the bureau had no control over the time of day that its advertising was broadcast, which included many early morning hours to very small viewing audiences. For the 2000 decennial census, the bureau expanded its marketing program to a national audience during prime viewing times and hired a contractor to

⁸The bureau achieved an initial mail response rate of about 64 percent, 3 percentage points higher than it had anticipated when planning for nonresponse follow-up. However, initial bureau data on the postcensus mail return rate—which is a more precise indicator of public cooperation—was 72 percent, a decline of 2 percentage points from the 74-percent mail return rate the bureau achieved in 1990. (The bureau's figures are preliminary and subject to verification upon receipt of final data.) See *2000 Census: Better Productivity Data Needed for Future Planning and Budgeting* (GAO-02-4, October 4, 2001).

design and conduct a professional advertising campaign at a cost of about \$1 per housing unit.

- The bureau established partnerships with businesses, nongovernmental organizations, and government entities to help deliver the census message and obtain a more complete and accurate population count. This activity was considered important because local organizations knew their conditions and circumstances better than the bureau. This effort resulted in bureau partnerships with about 140,000 state, local, and tribal governments and community groups that added about \$1 to the per housing unit cost to the 2000 census. A recent GAO report contains further information and best practices on the bureau's partnership program.⁹

Other Framework Costs

The remaining frameworks 1, 4, 6, and 7 contributed the remaining \$1 of the \$24 per housing unit cost increase for the 2000 census when compared to the 1990 census. As indicated in table 2, the costs for these four frameworks for the 1990 census totaled about \$745 million or about \$7 of the total \$32 per housing unit cost. For the 2000 census, costs for these four frameworks increased about 23-percent to about \$920 million or about \$8 of the total \$56 per housing unit cost. The \$1 cost increase for the 2000 census was due to increased bureau efforts to compile a complete and accurate address list and to plan, evaluate, and test aspects of the census design, including dress rehearsals.

Agency Comments and Our Evaluation

In commenting on a draft of this report, the Department of Commerce, U.S. Census Bureau, concurred with the underlying data as presented in this report and provided its perspective on four matters, which we address below.

First, the bureau stated repeatedly that Census 2000 was enormously successful and it was disappointed we made no effort to assess the costs of the 2000 census with respect to the high quality of the data produced in the face of significant challenges. In this regard, the objectives of this review did not include assessing the quality of the 2000 census. Our objectives were to (1) update full-cycle costs to reflect the most current information and (2) analyze bureau data to determine the causes of the significant increase in cost per housing unit for the 2000 census when

⁹2000 Census: Review of Partnership Program Highlights Best Practices for Future Operations (GAO-01-579, August 20, 2001).

compared to the cost for the 1990 census. Further, the bureau is still assessing the quality of the 2000 census in its postenumeration review through fiscal year 2003. As stated in the introduction to this report, this product is one of several we will be issuing in the coming months on lessons learned from the 2000 census. As was done after the 1990 census, we are currently reviewing key operations of the 2000 census.

Second, the bureau stated that we reported the cost increases without providing appropriate explanation for them. We disagree. Throughout this review, we repeatedly asked the bureau for explanations and supporting documentation for the reasons for the cost increases. To the extent data and explanations were provided for the cost increases, we discussed them in this report. However, in many instances, particularly with respect to the 1990 census, the bureau was unable to provide us explanations or documentation at the activity and project level. Our report clearly states that cost information provided by the bureau for the 1990 census was limited.

Third, the bureau pointed out that any analysis of cost increases must take into account the fact that the bureau was asked to develop, and to begin to implement, two different operational designs. Our September 1999 report¹⁰ provided information on the Supreme Court decision that prohibited the bureau from carrying out its plans to use statistical methods. As mentioned in that report, the bureau did not begin detailed budgeting for a nonsampling-based census until after the Supreme Court ruling in January 1999. Our work associated with this review showed that the majority of the cost increases for the 2000 census were not in the planning of two operational designs but in the execution of the traditional census. Specifically, we found no evidence that the bureau's planning for a "dual-track" census was a significant driver of cost increases of the 2000 census compared to the 1990 census.

Finally, the bureau noted that it was not appropriate to discuss the cost increases without acknowledging the substantial achievement in developing and implementing extensive new census operations. As stated previously, the objectives of this review did not include evaluating the quality of new programs implemented as part of Census 2000. Throughout the report, we mentioned several important innovations to the census

¹⁰2000 Census: Analysis of Fiscal Year 2000 Amended Budget Request (GAO/AIMD/GGD-99-291, September 22, 1999).

process and related costs, including expanded partnership agreements, the New Construction program, the availability of the census questionnaire in multiple languages, and expanded mass media efforts including the first-ever paid advertising campaign. Also, we have a separate effort under way to analyze variances from the bureau's fiscal year 2000 budget and the reasons that certain obligations and expenditures were different than planned.

The complete text of the response to our draft report from the Department of Commerce, U.S. Census Bureau, is presented in appendix II.

We are sending copies of this report to the Chairman and Ranking Minority Member, Senate Committee on Governmental Affairs, and the Chairman and Ranking Minority Member, House Committee on Government Reform and Oversight. We are also sending copies to the Acting Director of the U.S. Census Bureau, the Secretary of Commerce, the Director of the Office of Management and Budget, the Secretary of the Treasury, and other interested parties. This report will also be available on GAO's home page at <http://www.gao.gov>.

If you or your staffs have any questions on this report, please contact me at (202) 512-9095 or by e-mail at kutzg@gao.gov or Roger R. Stoltz, Assistant Director, at (202) 512-9408 or by e-mail at stoltzr@gao.gov. Key contributors to this report were Cindy Brown Barnes and Linda Brigham.

A handwritten signature in black ink, reading "Gregory D. Kutz". The signature is stylized, with a large, looping initial "G" and a cursive "Kutz".

Gregory D. Kutz
Director
Financial Management and Assurance

Appendix I: Objectives, Scope, and Methodology

The objectives of this report were to (1) update full-cycle costs and (2) analyze bureau data to determine the causes of the significant increase in cost per housing unit for the 2000 census when compared to the cost for the 1990 census. We did not assess the quality of the 2000 census in this report. To fulfill these objectives, we obtained and analyzed financial data from the U.S. Census Bureau to develop full-cycle costs of the 1970, 1980, 1990, and 2000 decennial censuses and converted all amounts to constant fiscal year 2000 dollars¹ in order to eliminate the effects of inflation over time. We then identified components of full-cycle costs to the extent the bureau was able to provide the data and calculated cost per housing unit. For the 2000 census, we obtained cost and full-time equivalent employment information for budget and actual data from unaudited bureau financial management reports. This information was available in eight broad “frameworks” of effort that the bureau further divided into 23 activities and, within these activities, further divided into 119 projects. However, the 1990 census information was originally presented in 13 frameworks. We requested and the bureau provided reclassified cost data on the 1990 census in these eight frameworks to help facilitate comparisons between the 1990 and 2000 censuses.

For the 1990 census, the bureau provided very limited cost data by activity and project, so we decided not to attempt detailed cost comparisons at that level of detail. We therefore focused on identifying activities or projects for the 2000 census that, according to the bureau, either did not exist or had very low costs in the 1990 census. We also used other bureau information, such as pay rates, employment statistics, and the number of temporary offices, to supplement our analysis as needed.

We conducted interviews with senior bureau officials and others who provided us with oral and written evidence. This included an overview of 2000 census operations with comparisons to 1990 census operations, reasons for the increase in the cost per housing unit, and cost studies and analyses from the bureau and other independent organizations. We reviewed and analyzed this information as well as our past reports on decennial census operations.

¹We used the GDP price index, an economywide measure, to adjust for inflation for the 1970, 1980, 1990, and 2000 decennial censuses. For fiscal years 2001 through 2003, we deflated cost estimates to constant fiscal year 2000 dollars using factors from the Congressional Budget Office's *Economic and Budget Outlook*, January 2001.

**Appendix I: Objectives, Scope, and
Methodology**

We performed our work in Washington, D.C., and at bureau headquarters in Suitland, Maryland. Our work was performed from June through August 2001 in accordance with U.S. generally accepted government auditing standards, except that we did not audit and therefore give no assurance as to the reliability of cost information provided by the bureau.

On November 7, 2001, we received comments from the Department of Commerce, U.S. Census Bureau, on a draft of this report. The bureau's comments are discussed in the "Agency Comments and Our Evaluation" section and are reprinted in appendix II.

Appendix II: Comments From the Department of Commerce, U.S. Census Bureau



THE SECRETARY OF COMMERCE
Washington, D.C. 20230

NOV - 7 2001

Mr. Gregory D. Kutz, Director
Financial Management and Assurance
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Kutz:

The Department of Commerce appreciates the opportunity to comment on the General Accounting Office draft document entitled *2000 Census: Significant Increase in Cost Per Housing Unit Compared to 1990 Census*. The Department of Commerce's comments on this report are enclosed.

If you have any further questions, please call me or Brenda Becker, Assistant Secretary for Legislative and Intergovernmental Affairs, at (202) 482-3663.

Warm regards,

A handwritten signature in dark ink, appearing to read "Donald L. Evans", is written over the typed name.

Donald L. Evans

Enclosure

Enclosure

Comments from the U.S. Department of Commerce
U.S. Census Bureau

U.S. General Accounting Office Draft Report Entitled *Significant Increase in Cost
Per Housing Unit Compared to 1990 Census*

Comments on the Text of the Report

The U.S. Census Bureau has reviewed this report carefully and appreciates this opportunity to respond prior to its publication. While we have little disagreement with the underlying data, we are concerned with the General Accounting Office's (GAO) characterization of the cost increase per housing unit in Census 2000 relative to the 1990 census, particularly with respect to GAO's conclusions based on a direct comparison of specific components of these two very different censuses. As we stressed repeatedly in our discussion with GAO, Census 2000 was planned and implemented in an environment that was significantly different from the censuses of 1970, 1980, and 1990.

Moreover, Census 2000 was enormously successful. The Census Bureau reversed a decades-long trend in declining response rates, and our analyses indicates that Census 2000 achieved the lowest net undercount of any census. Moreover, the differential undercount also was significantly reduced as well. We are disappointed that GAO makes no effort in this report to assess the costs of Census 2000 with respect to the high quality of the data produced in the face of significant challenges.

We are concerned that, throughout this report, GAO reports the cost increases without providing appropriate explanation for them. For example, the report's subheading on page 8 states that "cost per housing unit for the 2000 census almost doubled," when, in fact, the increase was 75 percent. This cost increase is better understood in light of trends observed since 1970, which indicates that conducting the census has become increasingly difficult. The chart on page 7 of the report shows that the cost per housing unit increased by 83 percent from 1970-1980, 33 percent from 1980-1990, and 75 percent from 1990-2000. This trend can be attributed to a variety of factors, including an increase in populations that are difficult to count and growing hostility toward the federal government. The increased cost per housing unit observed in Census 2000 must be discussed in the context of the Census Bureau's ability to reverse a decades-long trend in declining response rates, which reflects an increase in cooperation from the public, and the fact that Census 2000 produced high-quality census data in light of the significant and growing challenges inherent in conducting the decennial census.

Any analysis of the cost increases associated with Census 2000 must take into account the fact that the Census Bureau was asked to develop, and to begin to implement, two different operational designs. The difficulties and expense of conducting Census 2000 on

See comment 1.

two concurrent tracks were further exacerbated when, just 15 months before *Census Day*, the United States Supreme Court issued its decision, declaring that the use of statistical methods for producing the apportionment counts was unconstitutional. One can easily conclude that, contrary to the conclusion in GAO's report, a significant portion of the \$24 per housing unit increase observed between the 1990 census and Census 2000 can be attributed to the expense associated with this unprecedented requirement.

In addition, it is not appropriate to discuss this cost increase without acknowledging the Census Bureau's substantial achievement in developing and implementing extensive new census operations, which included establishing thousands of partnership agreements; designing and carrying out mass media campaigns; expanding efforts for recruiting, selecting, training, outfitting, and managing nearly 1 million workers; and collecting, analyzing, and organizing billions of pieces of information. The most important story about Census 2000 is not that the cost per housing unit increased, but that in the face of unprecedented challenges, the Census Bureau was consistently on time and under budget in producing a high-quality census. This message was virtually ignored in the GAO report.

The Census Bureau also has concerns regarding the report's discussion of the specific components of Census 2000 operations as follows:

- **Field Data Collection**—Using its method of disbursing the unit cost proportionally across budget frameworks, the report attributes the greatest cost increase to field data collection operations and cites the following reasons for this increase: (1) "expanded data collection operations," (2) "lower enumerator productivity for the nonresponse follow-up operation," and (3) "higher logistical support costs." While the Census Bureau does not disagree with the report's specific conclusions, we are troubled by the narrow focus of this analysis.

See comment 3.

For Census 2000, the Census Bureau fundamentally changed its approach to recruiting the staff needed to complete field operations. In 1990 the Census Bureau experienced significant difficulties in recruiting and maintaining a sufficient work force to complete the 1990 census. In order to address this, the Nonresponse Follow-up (NRFU) enumerators were paid competitive wages during Census 2000, and the hiring process was front-loaded so that sufficient numbers of qualified field personnel were in place to complete operations.¹ These

¹ An evaluation of the 1990 census pay rates conducted by WESTAT indicated the pay rates were too low. For Census 2000, NRFU enumerator pay rates were set at 75 percent of the prevailing local wage rates. The average enumerator pay rate for the 1990 census was \$6.82, in 1990 dollars. The average enumerator pay rate for Census 2000 was \$12.02.

innovations were instrumental in meeting the deadlines established in the Census Bureau's operational plan.

The significance of this cannot be overstated. Repeated census evaluations have determined that the most significant factor in data quality is obtaining census data as close as possible to *Census Day*. By recruiting enough potential field employees and paying a competitive wage, the Census Bureau was successful in completing the NRFU operation in 9 weeks, as opposed to 17 weeks in 1990. The ability to hire and retain enough highly skilled temporary staff throughout the course of the census contributed significantly to higher quality of the data collected in Census 2000 and the timely completion of operations. The timely completion of NRFU provided sufficient time and resources to conduct other operations designed to improve coverage.

These innovations are not addressed in this report, but they were central to the Census Bureau's ability to produce high-quality Census 2000 data.

See comment 4.

- **Use of Technology and Contractor Support**—The report implies that much of the increased cost attributed to the Census Bureau's technological innovations occurred because of increased reliance on private contractors. The Census Bureau's association with private firms in developing the data capture and data dissemination systems played an important role in being able to produce high-quality data under tight deadlines. In addition, the data capture operation allowed the Census Bureau to capture the names of all census respondents. This has never been accomplished prior to Census 2000, and it was a key factor, contributing to the assessment of the results of the Accuracy and Coverage Evaluation.

In addition, as GAO has stressed, there were significant risks associated with the Census Bureau's in-house software development process. These risks were substantially mitigated by procedures for developing this operation with the assistance of private contractors. In fact, based on GAO recommendations, the Census Bureau is exploring the possibility of expanding such software development activities to in-house operations. Is the GAO now suggesting that we refrain from doing this due to concerns about the costs?

See comment 5.

- **Enhanced Methods for Data Content and Products**—The report cites the increased costs due to the redesign of the questionnaire and the availability of questionnaires in six languages, including English. However, no mention is made on the impact of this on the response rate and the general public's improved

Appendix II: Comments From the Department
of Commerce, U.S. Census Bureau

See comment 5.

cooperation with the Census Bureau. In addition to offering respondents an opportunity to request a questionnaire in six languages, including English, language assistance guides were available in 49 languages. In conjunction with the Census 2000 Partnership Program, this effort was instrumental in providing traditionally undercounted communities with a mechanism for ensuring that they were included in the census. Moreover, the redesigned questionnaire, which was easier to fill out, provided more accurate data that contributed to the overall quality of the Census 2000 results. Once again, a discussion of increasing costs, without regard to the reasons behind those increases, is misleading.

- **Increases in Marketing, Communication, and Partnership Programs**—The Census 2000 outreach, promotion, and partnership program was instrumental in reaching traditionally undercounted communities. To encourage households to respond to Census 2000, the Census Bureau initiated the largest promotions and outreach effort in its history for a decennial census. We established more than 140,000 partnerships with a wide range of government and nongovernment organizations at the national and local levels. Organizations throughout the United States implemented promotional activities to educate the public about the importance of participating in the census. Starting in November 1999, we launched our first paid advertising campaign for Census 2000. This campaign was extended in targeted cities to encourage cooperation with enumerators during the NRFU operation. Other efforts included the distribution of numerous news releases to generate media coverage during the various stages of the census. We also gave media outlets a number of video news feeds tailored to local areas. The success of this effort is downplayed in GAO's report, but like the other innovations implemented during Census 2000 it was central to the Census Bureau's ability to increase the response rate and reduce the undercount.
- **Estimated Full-Cycle Costs**—The report states that "the estimated full-cycle costs of the 2000 census do not take into account all costs of the decennial" and goes on to cite "over \$150 million of costs such as estimated claims for workers compensation, unemployment for temporary workers, and litigation." In fact, the \$6.5 billion full-cycle estimate does account for estimated claims for workers compensation and litigation. The only costs not included in this estimate are unemployment costs for temporary workers, since the budget of this is appropriated and obligated by the Department of Labor.

See comment 6.

The following are GAO's comments on the letter dated November 7, 2001,
from the Department of Commerce, U.S. Census Bureau.

GAO Comments

1. See the "Agency Comments and Our Evaluation" section of this report.
2. The full-cycle cost of the 2000 census was nearly double the full-cycle cost of the 1990 census. On a cost-per-housing-unit basis, the increase was 75 percent, which is accurately stated in the text of our report. We have modified the heading referred to in the bureau's comments to reflect that the 75-percent increase was significant. Also, we disagree with the bureau's assertion that the increased cost per housing unit observed in the 2000 census must be discussed in the context of the bureau's ability to reverse a decades-long trend in declining response rates, which reflects an increase in cooperation from the public. We have modified the report to reflect that preliminary data on the postcensus mail return rate, a more precise indicator of public cooperation than the initial mail response rate, declined from 74 percent for the 1990 census to 72 percent for the 2000 census.
3. The changes in field operation staffing described by the bureau in its comments on field data collection activities for the 2000 census, as well as other changes, may have had a significant impact on the quality of the 2000 census results. However, as stated in our report, we did not assess the quality of the 2000 census. Also, we did not have sufficient information to adjust the cost per housing unit in the 2000 census for such changes in quality. In addition, as stated in footnote 3, we adjusted all costs in the report to constant fiscal year 2000 dollars using the Gross Domestic Product price index. This index reflects changes in the compensation paid to all federal workers, which increased from 1990 to 2000 at about the same rate as the wages paid for field operation staff. Thus, these wage increases cannot be viewed as a major reason for the increase in the cost per housing unit for the 2000 census.
4. Our report does not imply that much of the increased costs attributed to the bureau's technological innovations occurred because of increased reliance on private contractors. Further, the scope of our work did not include determining whether the use of contractors was appropriate for these activities. We reiterate that this report responds to our congressional clients' request for information on the costs of the 2000 census and does not and was not intended to provide qualitative information on the results of the census. We are not suggesting that the

bureau refrain from using external contractors to assist in exploring the possibility of expanding software development activities to in-house operations, particularly as these activities become more complex. The concern discussed in our October 2000 report¹ was the lack of effective and mature software and system development processes, not whether such activities were done by contractors or in-house.

5. This report provided information on the significant cost drivers for the 2000 census as compared to the 1990 census, in accordance with our requesters' needs. As stated in the "Agency Comments and Our Evaluation" section of this report, we are conducting a review of key operations of the 2000 census. Thus, the scope of this report did not include an assessment of the effect of the redesign of the questionnaire and the availability of questionnaires and language assistance guides in many languages. Likewise, while the report refers to the increased cost of marketing, communication, and partnership programs, the link between response rates and these programs was not within the scope of our review.
6. We agree that estimates for worker's compensation claims and litigation are included in the \$6.5 billion of full-cycle cost to the extent that these costs are reflected in the fiscal year 2002 and 2003 budgets and have modified the report accordingly.

¹2000 Census: Headquarters Processing System Status and Risks (GAO-01-1, October 17, 2000).

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